SCIENCE CITIES

Has Tsukuba Put Its Worst Days Behind It?

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Science park. Tsukuba's research facilities stretch to the horizon.

Materials scientist Shigeyuki Kimura was overjoyed when his research institute—the National Institute for Research in Inorganic Materials—was the first of 47 government laboratories to move from central Tokyo to the Tsukuba Science City in 1972. For several years, he and his colleagues had worked in an ancient, unheated government office building. "During the winter," Kimura recalls, "the cold wind blew through the laboratory for months." In Tsukuba, then a brand-new urban center under construction amid fields and pine forest 40 miles northeast of Tokyo, the Science and Technology Agency (STA) had built the researchers a spanking-new facility in which Kimura and his colleagues could finally perform their experiments on molten silicon without fear of contamination.

In the 20 years that have passed since then, some 9000 researchers have joined pioneers like Kimura at Tsukuba. And like Kimura, many have welcomed the chance to get their hands on the best equipment and to work in spacious new buildings. But ask these researchers if Tsukuba really lives up to its oft-promoted image as a city where scientific creativity and fertile cross-disciplinary collaborations flourish, and you frequently get a lukewarm response. Even some of the city's most optimistic advocates, like Tetsuzo Kawamoto, a former official who supervised the move of STA institutes to Tsukuba, are rather downbeat: "One should not have the expectation that high levels [of research] such as a Nobel Prize will be coming out of Tsukuba," he says.

The chief gripe in the labs is that researchers are isolated, both from the intellectual life of Tokyo and from people in the institutes next door. "We sometimes joke that we see some of our colleagues at conferences in Tokyo or Osaka more often than in Tsukuba," says Yoshifumi Katayama, research director of the Optoelectronics Technology Research Laboratory. (In a comment echoed by other Tsukuba scientists, Katayama does add that the city's relative isolation helps his researchers concentrate on their work.)

A drive around Tsukuba quickly reveals why researchers complain. Although the total population is only about 170,000, the city is spread out along a 12-mile elongated teardrop of land—a consequence of the government's refusal to obtain land through eminent domain, leaving planners to build their city mostly in a narrow strip of readily available national forest. Travel by taxi from, say, the labs of Nippon Glaxo near the north edge of Tsukuba to the agricultural research park in the south and you're in for a 25-minute ride through wide open spaces, rice paddies, and lush forests, dotted with clusters of modern laboratory buildings, retail shops, and stodgy government-subsidized apartment buildings. Because there's no real center to the city and only an inconvenient bus service linking all its outlying areas, Tsukuba's resident researchers have adopted one of the less-redeeming features of Silicon Valley—they drive everywhere. Getting to Tokyo presents similar hassles: A nonstop bus runs to Tokyo Station but takes nearly an hour and a half (more if there's a traffic jam on the Joban Expressway); express train service, on the other hand, takes only 45 minutes, but requires a 20-minute, $30 taxi ride to nearby Tsuchiura.

But there's no doubt that Tsukuba's researchers are happier than they used to be. In the beginning Tsukuba lacked good schools and any sort of entertainment—one reason that many researchers in the 1970s refused to move their families along with their institutes, preferring instead to make a long daily commute from the capital. Ten years later, planners received a grim warning of the sense of isolation when the suicide rate among Tsukuba researchers rose to the highest in the nation.

These days, there's even some evidence that scientific communication is improving. Paper co-authorship rates show that inter-laboratory communication has grown considerably stronger over the past decade, says Michigan State communications professor James Dearing, who is writing a book about Tsukuba. Part of the credit, Dearing says, goes to new leadership at the University of Tsukuba and to two independent organizations that run lectures and seminars to help researchers meet and share ideas.

And by the end of the decade, Tsukuba's links to Tokyo will improve with the opening of a new express commuter line between the two cities. That will help end Tsukuba's isolation, but researchers could pay a high price: The science city may end up as a vast and colorless suburban Tokyo dormitory town.

–David P. Hamilton

If at First You Don't Succeed...

Tsukuba may not be perfect, but that hasn't stopped Japan's planners from trying again. Work is already under way on a vast new science city called Keihanna, at a site equidistant to the cities of Kyoto, Osaka, and Nara. Ask the planners how their city will differ from Tsukuba, and they reply with a single voice: Keihanna will have to attract laboratories from private industry, not government research institutes. As a result, they're concentrating on making the city an excellent place to live and work in order to attract the "companies of the 21st century" they so devoutly want. The city's design and layout reflect that desire: In sharp contrast to Tsukuba's elongated district, Keihanna offers plenty of room—some 150 Km^2 in an area shaped roughly like a ten-gallon hat, carved up into 12 districts that will each include research institutes, residences, and retail businesses.

Laboratories are just starting to move to Keihanna, so it's much too early to tell whether it really holds the promise that its supporters claim. Its research institutes will be, if anything, scattered farther apart than those of Tsukuba—and as private laboratories, they may have even less incentive to communicate with one another than public institutions would. On the other hand, many of the expected institutes have an unusually multidisciplinary hue, from MITI's much-ballyhooed Research Institute of Innovative Technologies for the Earth to the International Institute of Advanced Study, Japan's first (and so far, only) "think tank" for academic scholars. And the city plans also include a variety of museums, libraries, and historical temples and shrines that should offer rich opportunities for "cultural" study missing from Tsukuba.

–D.P.H.